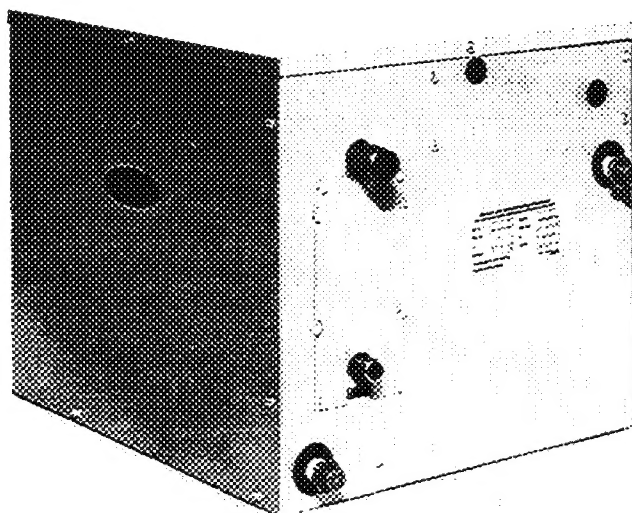


Single line  
07KA-255  
9/67

# Water-Cooled Condensing Units



**Fig. 1 - 07KA Water-Cooled Condensing Unit**

**Table 1 - Physical Data**

CONDENSING UNIT 07KA	002	004
REFRIG CHG* R-22 (lb)	2.5	3.0
COMPRESSOR		
Single-phase	06AD126	06AD228
3-phase	-	06AC228
Oil Charge† (pt)	2.5	
CONDENSER	Tube-in-Tube	
HIGH PRESSURESTAT		
Cutout	428 ± 5 psig	
Cut-in	320 ± 20 psig	
Fixed Differential	108 psig	
LOW PRESSURESTAT		
Cutout	30 ± 4 psig	
Cut-in	60 ± 15 psig	
Fixed Differential	30 psig	

\*Factory charge. Refer to Refrigerant Charging, page 3, for charging details.

†Use Carrier PP-33-2, Texaco Capella BI or Suniso 3G Dual Inhibited oil.

NOTE: High and low pressurestats cut-in and cutout points are not adjustable.

**Table 2 - Electrical Data (60-Cycle)**

COND UNIT 07KA	VOLTS PHASE	NDSV	LRA	FLA	MAX KW	WSA	BRANCH CIRCUIT				
							Wire Size (AWG No.)	Max Ft Wire	Wire Size (AWG No.)	Max Ft Wire	Fuse Amp*
002310	230 1	230	49.0	12.0	2.75	15.2	12	46	10	74	20
004310	230 1	230	78.0	17.1	5.0	21.6	10	52	8	82	30
004510	230 3	220- 240	53.5	10.3	5.0	13.1	12	65	10	103	20

NDSV - Nominal Distribution System Voltage (Application Range) Motors and controls will operate satisfactorily 10% above and 10% below Nominal Distribution System Voltage.

LRA - Locked Rotor Amps

FLA - Full Load Amps

WSA - Wire Sizing Amps

\*Maximum dual element fuse size

**NOTES:**

1. Control circuit voltage is 24 volts on all units.

2. Branch circuit wire sizes and corresponding maximum wire lengths tabulated will result in a 1% voltage drop at nameplate full load amperage.

## START-UP INSTRUCTIONS

Crankcase heater on 07KA004 should be energized a minimum of 4 hours before starting unit. 07KA single-phase units are of split capacitor (PSC) type and require an equalized system pressure to start.

### Start Procedure

1. Back-seat (open) liquid and suction line service valves. (When accessory water regulating valve is used, "crack" liquid line service valve one-half turn from backseat position.)

2. Open water supply valve and allow water to reach condenser. (Water regulating valve restricts water until unit is operating.) Open condenser water discharge valve (when used).
3. Close disconnects energizing entire system.
4. Set room thermostat to desired temperature.
5. Set room thermostat to "Cool" and fan switch as desired.

Motors and controls will operate satisfactorily 10% above and 10% below nominal distribution system voltage (see Table 2).

## COMPRESSOR

When supply voltage is within 10% limit and compressor does not start, give compressor a temporary capacitance boost. Use a start booster assembly.

Run compressor for 10 minutes, then shut off and allow system pressure to equalize. Try re-starting without boost capacitor. If after two attempts the compressor does not start, add an accessory start capacitor relay package.

The accessory start relay used with the 06A compressor has a current-limiting device to protect the compressor in case of relay malfunction. An open current-limiting device indicates that the relay must be changed.

**Compressor Protection** - 07KA units have a high pressurestat located on liquid service valve and a low pressurestat located on suction service valve. (See Table 1 for high and low pressurestat settings.)

Single-phase compressor motors are protected by an internal current temperature-sensitive overload. Three-phase compressors are protected by internal thermostat and external current overloads. Internal temperature-sensitive overloads reset automatically when internal motor temperatures drop to a safe level. (Overloads may require up to 30 minutes to reset.)

When an internal overload is suspected of being open, check by using an ohmmeter or continuity tester. Refer to the Carrier Standard Service Techniques Manual, Chapter 2 for complete instructions.

### Compressor Removal

1. Shut off power to unit. Vent refrigerant to atmosphere or use refrigerant removal methods described in Carrier Standard Service Techniques Manual, Chapter 1.
2. Remove both unit top cover and wrap-around enclosure.
3. Remove compressor power leads from unit control box and pressure relief plug from suction line. Unsweat suction and hot gas lines from compressor.
4. Remove compressor hold-down bolts. Lift compressor out thru top of unit.

## REFRIGERANT CHARGING

07KA units contain correct operating charge (Table 1) for complete system when combined with Carrier approved capillary-controlled evaporator sections and with a Carrier accessory precharged tubing package in 10- or 18-ft lengths. Additional charge may be required on other systems. Add a crankcase heater to 07KA002 when factory charge is exceeded. (Crankcase heater available from Carrier Service Parts Center, part no. HT32AZ242.) Do not use condensing unit charge for purging evaporator or tubing systems.

Refer to Carrier Standard Service Techniques Manual, Chapter 1 for system evacuation, dehydration instructions and details of charging methods listed below.

Service valve access cover is provided to accommodate charging lines. Replace cover when finished.

**Weight Method** - Systems with capillary tube control are recharged by weight only. Refer to Table 1 for correct system charge. Blow any refrigerant remaining in system before recharging.

When interconnecting tubing is shorter than 10 ft or longer than 18 ft, add (subtract) charge as follows:

3/4 oz per 10 ft of 5/16-in. OD liquid line.

1-1/2 oz per 10 ft of 3/8-in. OD liquid line.

**Sight Glass Method** - A satisfactory operating charge for *thermal expansion valve controlled systems* can be obtained by weighing in the refrigerant charge shown in Table 1 for capillary feed coil systems. Then, if liquid line sight glass is not clear, add refrigerant until sight glass clears at an operating condition of between 110 F and 120 F condensing temperature.

For maximum capacity (with thermal expansion valve systems), slightly more charge is required than will be provided by the above procedure. To achieve this optimum charge, proceed as follows:

1. Charge per above.
2. Holding pressure at *liquid valve* (by hand throttling the condenser water) to a corresponding saturation temperature of approximately 115 F, add refrigerant charge until actual liquid temperature at this point is approximately 97 F (18 F liquid subcooling).
3. In any case, do not charge system to more than 3 lb for systems with 002 and 003 size coils and 4 lb for systems with 004 and 005 size coils.

## CHECKING COMPONENTS

Refer to Carrier Standard Service Techniques Manual, Chapter 2 for complete instructions on checking electrical components.

## PUMPDOWN PROCEDURE

07KA units may be pumped down in order to make repairs on low side of system without losing complete refrigerant charge.

1. Attach pressure gage to suction service valve gage port.
2. Front-seat liquid line valve.
3. Jumper low pressure switch.
4. Start unit and run until the suction pressure reaches 5 psig. (Should the compressor go off on internal overload or high pressurestat before suction pressure reaches 5 psig, shut off suction valve and vent remaining refrigerant.)

5. Shut unit off and front-seat suction valve.
6. Vent remaining pressure to atmosphere.

**NOTE:** The 07KA condenser will not hold a complete system refrigerant charge. At 120 F condensing temperature the condenser will hold approximately 2 lb of refrigerant 22.

#### **PRESSURE RELIEF PLUG**

This plug is a protective device which melts at 200 F, relieving excess system pressure. Remove when soldering on suction tube. For plug replacement order Carrier part no. EK02JA203.

#### **COMPATIBLE FITTING REPAIR**

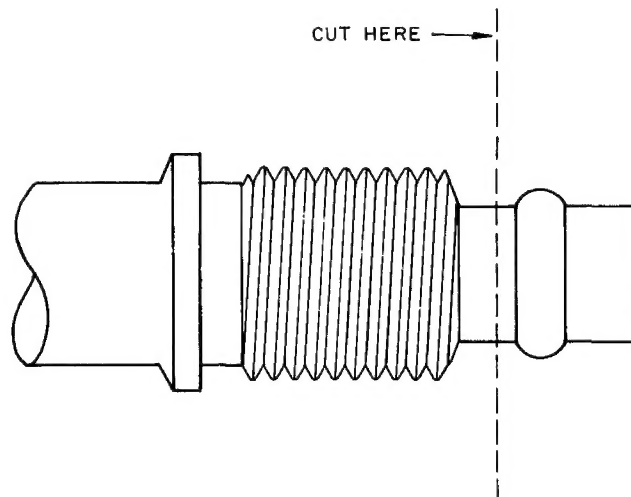
**Leaking Mechanical Connection -** Front-seat condensing unit service valves and relieve refrigerant pressure in tubing. Back lock nut off compatible fitting onto tube. Cut fitting with hacksaw between threads and seal ring bead as shown in Fig. 2. Remove tubing section remaining in threaded portion of fitting. Discard lock nut.

Clean, flux and insert new tube end into remaining portion of compatible fitting. Heat and apply low-temperature (450 F) solder.

**CAUTION:** Service valves have teflon washer. Do not overtighten (finger pressure will seal) or overheat. Do not exceed 10 ft-lb torque when tightening and wrap valve base in wet rag when soldering.

**Leaking Sweat Connection -** Front-seat service valves and relieve refrigerant pressure in tubing. Clean and flux area around leak and apply low-temperature (450 F) solder.

Evacuate or purge evaporator coil and tubing system. Add refrigerant charge (see charging instructions).



**Fig. 2 - Repair of Mechanical Connection**

#### **CONDENSER**

If excessive discharge pressure is experienced with normal water flow, the condenser tubes may be fouled and require cleaning. Contact a local water treatment firm for details on chemical cleaning.

#### **LUBRICATION**

**Compressor** contains factory oil charge. When oil is lost, see Table 1 for oil charge and Carrier Standard Service Techniques Manual, Chapter 1, page 1-21 for instructions.

## TROUBLE SHOOTING

### Unit Cycles on High Pressure Switch

1. Insufficient water pressure to unit?
2. Defective water control valve?
3. Condenser water tube clogged?
4. Water drain line clogged?
5. Liquid Line valve closed?
6. Excessive refrigerant charge?

### Unit Cycles on Low Pressure Switch

1. Defective expansion valve?
2. Unit short of refrigerant?
3. Fan not running?
4. Clogged filter?
5. Suction line valve closed?
6. Plugged capillary?

### Unit Runs But Insufficient Cooling

1. Water control valve set too low?

2. Dirty air filter?
3. Low refrigerant charge?
4. Defective expansion valve?
5. Coil slightly iced, low air supply?

### Unit Will Not Run; Contactor Open

1. Defective transformer?
2. Thermostat circuit open?
3. Faulty control relay?
4. Overload open?
5. High pressure switch open?
6. Low pressure switch open?
7. Loose electrical connection?

### Unit Will Not Run; Contactor Closed

1. Loose lead at compressor?
2. Loose lead at contactor?
3. Motor winding open?

Manufacturer reserves the right to change any product specifications without notice.